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Team CSIR

NGRI introduces a New Marine Geophysical Technique in India for Offshore Oil Exploration Studies

The very high rate of depletion of hydrocarbon reserves has been a matter of major concern in the present Indian scenario, where huge amounts, to the tune of 120,000 crores of Indian rupees, are being spent annually to meet the demand. In order to mitigate this recurring massive expenditure, new strategies with innovative technology need to be explored in frontier areas of oil sector. Previous extensive MT studies on land in both Saurashtra and Kachchh region have provided clear indications of the hydrocarbon rich sedimentary layers on land provinces of Kachchh and Saurashtra and paved the way for possible potential in Gulf of Kachchh region.

Dr T. Harinarayana, Project Leader, National Geophysical Research Institutre (NGRI), Hyderabad, has recently applied a new geophysical tool like Marine Magnetotelluric (MMT) technique in the Gulf of Kachchh region of Gujarat, for the first time in India with the collaboration of Scripps Institute of Oceanography (SIO), USA. The equipment consists of two sensitive magnetometers to record the magnetic field signals and four silver-silver chloride electrodes located at 5 m length of four arms attached to the central unit to measure electric field signals. It is a major survey programme launched by NGRI with the funding support of CSIR and Directorate General of Hydrocarbons (DGH), New Delhi.

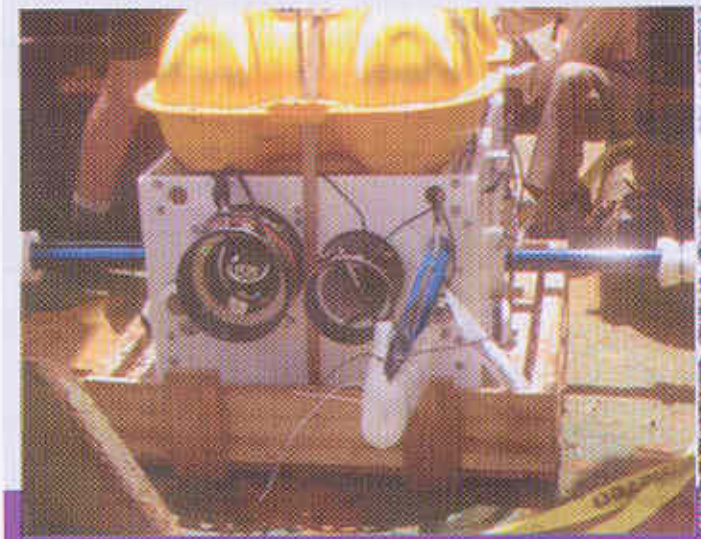
Continuous Land MT measurements have also been carried out simultaneously during the period of offshore data acquisition at two locations near Suthri in Kachchh. This has helped in applying the improved remote reference techniques.

CSIR News wishes its readers A Happy New Year

A Russian research vessel *Boris Petrov* was engaged and six US scientists led by Prof. Steve Constable from Scripps Institute worked together with NGRI scientists.Under this project, data were acquired at 30 MT locations in the offshore region of Kachchh with bathymetry ranging from 15 m to as deep as 2000 m. The deployed instruments have recorded the signals at sea bottom for 2 days continuously before recalling to the sea surface with remote operation.

Boris Petrov, the Russian vessel used for the survey

NGRI has been working on land for the last three decades using land magnetotelluric technique in geologically problematic areas such as volcanic rock covered areas and also Himalayan thrust zones for oil exploration and has now ventured into marine environment. Dr T. Harinarayana led as a party chief, the whole team consisting of 11 scientists from NGRI, six scientists form SIO and three scientists from NCAOR for this complex marine operation, where the tidal waves are as high as 9 to 12 m. With the successful implementation of this new technique in India, whole of east and west coast of India has opened up for new investigations with this technique for hydrocarbon exploration.



Marine Magnetotelluric equipment being assembled in the vessel

Marine Magnetotelluric equipment being deployed into the sea